Investment Outlook
Update

Tough times
– higher potential

November 2022

SEB

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November 2022

Introduction

We are nearing the end of a very dramatic and difficult year. 2022 will be referred to as the year when Russia invaded Ukraine, but also the year when inflation came roaring back and central banks abruptly had to abandon their controversial, extremely loose monetary policy. The effects of the Ukraine war, historically high inflation levels, dramatic key interest rate hikes, restrictive Chinese COVID-19 strategy and other factors have resulted in clearly toned-down forecasts of future global GDP growth and earnings generation in the corporate sector.

The lower economic outlook and higher discount rates in the financial system have clearly changed the equation for risk-taking. Price adjustments in the capital market has been dramatic, with large stock market declines, significant downturns in bond prices and sharp differences in the performance of different types of companies, regions and styles. Among other effects are that the US dollar has soared and property price trends have turned from positive to negative.

This process has been going on for about a year, but even though there are still plenty of problems ahead of us, some things have also improved. For example, we are close to a situation where central banks can end their interest rate hikes, since we are seeing tendencies for inflation rates to decline from very high levels. Actual underlying yields on government bonds have climbed from around zero – and in some cases from negative territory – to the far more attractive levels of today.

We are also seeing noticeably wider credit spreads: the premium paid to holders of corporate bonds beyond government bond yields. Meanwhile, stock market valuations have normalised. In many segments, they have reached appetising levels. In keeping with this, risk appetite among investors has shifted from excessive optimism to a cautious approach. The effect of this is that today there is higher potential in financial assets than at the end of 2021. But at the same time, we will face economic headwinds in 2023. In our portfolios, we are balancing these forces through neutral risk-taking and broad exposure.

This issue of *Investment Outlook* is a somewhat more compressed update of the situation and the changes that have occurred since our last issue in September, in line with the recent abbreviated online-only issue of our sister publication *Nordic Outlook*. Although this *Investment Outlook* is more concentrated than usual, it includes updates at the asset class level as well as overall portfolio strategy and two brand-new theme articles: "Energy storage – The power to lift solar and wind to the next level" and "Automation – New technologies and better solutions".

Wishing you enjoyable reading,
Fredrik Öberg, Chief Investment Officer
Asset Management & Investments

Market view, risk exposure and allocation

Peak inflation in the global economy is probably already behind us. The world's central banks should thus also be nearing the end of their key interest rate hikes. We foresee a recession during 2023, which may create further volatility, followed by a more positive economic outlook in 2024 and beyond. In this main scenario, the recession will be rather shallow and not so long-lasting, but with continued downside risks. Combined with reasonable asset valuations and a cautious attitude among investors, we believe it is still reasonable to maintain a largely neutral risk level. However, our portfolios include some reallocations that are reported below and in the sections of *Investment Outlook* about each respective asset class.

A weak 2023 followed by a subdued recovery

We have lowered our GDP growth outlook for 2023 in several steps this year. In principle, our latest forecast means that the 38 mainly affluent OECD countries will end up with real GDP growth of close to zero, while emerging market (EM) countries will achieve growth of nearly 4 per cent. This will bring total world GDP growth to 2.3 per cent, while we expect the corresponding figure for 2024 to be 3.6 per cent. Sweden diverges a bit; after a relatively strong 2022, growth will fall to a negative 1.5 per cent in 2023, followed by a rebound of 1.3 per cent in 2024. Because of the expected global economic slowdown, world employment will fall in 2023 and then recover.

Inflation will peak around the end of 2022 and then fall, with central banks expected to respond by cutting their key interest rates. In the United States, for example, we expect inflation to tumble from around 8 per cent today to 2.5 per cent by the end of 2024. During the same period, we expect the US Federal Reserve's key interest rate to peak at around 4.5 per cent and then fall to around 3.0 per cent by the end our forecast period.

Overall, this forecast can be described as a soft landing – including a recession that is neither protracted nor deep – but the subsequent expected recovery will also be more cautious. Various possible outcomes and a more detailed explanation can be seen in our "International overview" section, which is an excerpt from the November 15 issue of *Nordic Outlook Update*.

Downward revisions in our GDP forecasts, %

Market	2022	Rev.	2023	Rev.	2024
World	3.2	0.1	2.3	-0.3	3.6
United States	1.8	0.3	0.1	-0.4	1.5
China	3.5	0.1	5.3	0.1	5.1
Sweden	2.9	0.3	-1.5	-1,5	1.3
OECD	2.7	0.3	0.5	-0.4	1.9
Euro area	3.2	0.5	-0,4	-0.7	1.9
Emerging markets	3.6	0.0	3.8	-0.1	5.0

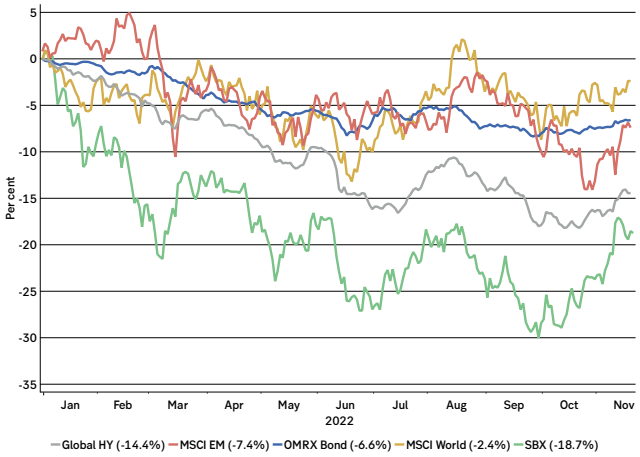
The table shows forecasts of real year-on-year economic growth in per cent, in line with our main scenario – expressed in purchasing power parities (PPP) – and our revision compared to the forecast that SEB published in late August. For a more detailed account of SEB's economic forecasts, see the "International overview" section, which is an excerpt from the issue of *Nordic Outlook* published on November 15.

Powerful volatility and a return to earlier valuation levels in the capital market

Until the end of September, a more or less constant decline in risk appetite predominated. Central banks were feverishly chasing ever-higher inflation rates by implementing a very rapid series of key interest rate hikes. Since then, we have seen some recovery in risk appetite. Valuations of financial assets, inflation expectations, growth forecasts, earnings estimates, key interest rates and other metrics are now more in harmony with each other, enabling investors to lift their gaze this autumn. They have stopped merely thinking about the next problem but are instead also assessing future potential. This signifies a halt, or at least a pause, in the decline in risk appetite. A certain recovery in share and bond prices as well as a calming of volatility have occurred, as shown in the charts below. The Swedish stock market, among others, is thus performing well again and has risen sharply in a brief period. Measured in Swedish kronor, the upturn in global equities and emerging market assets is not as large, since the US dollar is losing ground against the krona as risk appetite increases. Finally, fixed income investments are reacting favourably – both via falling government bond yields and shrinking credit spreads. In other words, the performance of portfolios over the past month or so is a mirror image of the preceding period of 2022.

After the recent recovery in risk appetite, yields have been adjusted downward, which can be regarded as an increase in bond valuation. The same applies to the price-earnings (P/E) ratios of stocks, which have risen at about the same pace as prices. However, both these effects are occurring after significant declines earlier in 2022.

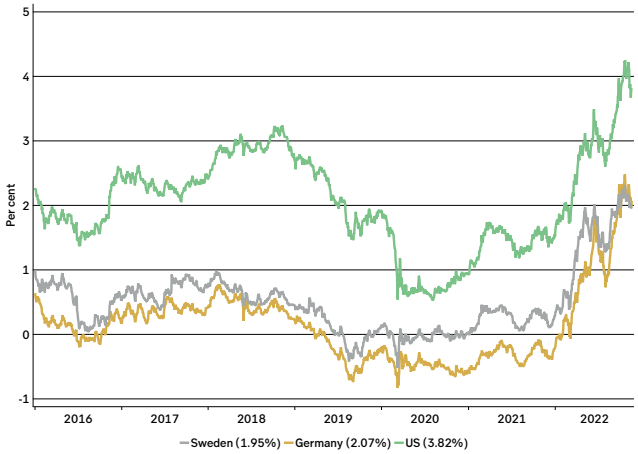
Steep declines are slowing, while the USD's "shock absorber" role is fading



Source: Bloomberg

The chart shows the 2022 performance of Swedish equities (SBX), the MSCI World Index and the MSCI Emerging Markets Index in Swedish kronor. Also shown are the performance of a Swedish fixed income index (OMRX Bond) and a global high yield (HY) corporate bond index, currency-hedged to Swedish kronor.

10-year government bond yields have soared to historically familiar levels



Source: Bloomberg

The chart shows 10-year government bond yields in the United States, Germany and Sweden. Because of their rapid upturn, these are now at levels prevailing around 2007, before the days of the global financial crisis and well above the levels prevailing during the "zero interest" period among the world's central banks.

The charts to the right on this page clearly indicate that expected returns on both equities and fixed income investments improved noticeably in 2022. This is, of course, partly because we have a very weak period behind us. The potential that has been built up will now be balanced against prevailing risks.

The risk map is changing shape, affecting the focus of investors

From a capital market perspective, 2022 has largely centred on rapidly rising inflation and the efforts of central banks to overcome this problem via powerful key interest rate hikes. This has led to the emergence of a risk that has been on the map for a long time: restrictive monetary policies, as well as rising interest rates and bond yields. Combined with the effects of the Ukraine war and the risks related to China's COVID-19 policy, the result has been changed – and at least partially normalised – pricing of financial and real assets via significant price declines. We will continue to live with the Ukraine war and Chinese COVID risks, while the effects of rate hikes will fade. Instead, the focus of market attention is shifting towards risks that may emerge now that we have reached higher interest rates. Are there companies, countries, economic sectors and financial structures that cannot cope with the new interest rate environment? In 2023 we also expect to enter a recession, while central banks are likely to maintain their new higher key interest rates in order to curb inflation. One risk connected to this situation is that it may lead to a deeper, more prolonged downturn than we are forecasting. If so, corporate earnings would probably also be squeezed more than we are now expecting

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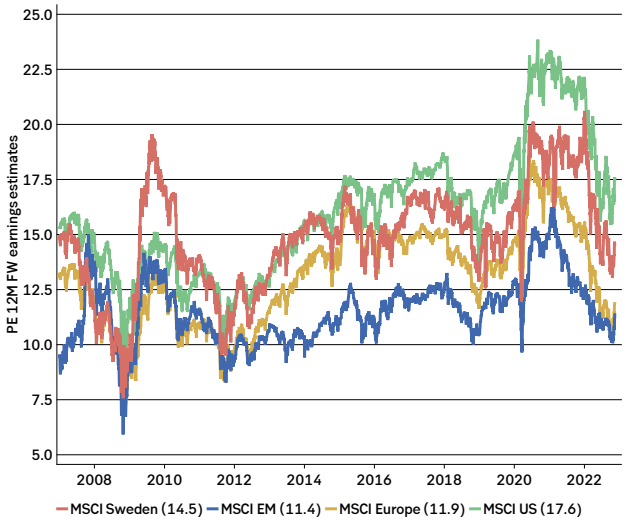
The stock market has punctured the pandemic bubble



Source: Bloomberg

The chart shows current and historical price-earnings (P/E) ratios for selected countries, regions etc. Valuations are based on MSCI indices. Within each market, there are still very large differences at company and sectoral levels. Also worth noting is that a broad Swedish equity index such as the SBX index is at levels comparable to the MSCI US, but with a clear krona/dollar currency discount.

Investors remain cautious and anticipate lower earnings in 2023

Stock market performance in recent months indicates that investors are showing a somewhat lower degree of risk aversion, but caution remains a watchword among investors. This is also evident from survey responses by professional investors, who are more cautious about both the economic situation and earnings growth than equity analysts' forecasts. One estimate is that investors expect corporate earnings to end up somewhere between unchanged and -10 per cent in 2023, while analysts have so far lowered their estimates to an increase of around five per cent next year. Depending on final outcomes, this implies both risks and opportunities.

We are maintaining a neutral allocation but have redistributed the risk in our portfolios

The balance between positive and negative factors has shifted. This influences our decisions regarding the appropriate distribution of risk. On the positive side, we see more appealing valuations of both equities and fixed income investments, although it remains important to be selective. Investors are also still risk-averse, which provides a positive signal in terms of positioning, risk appetite or what we would now like to describe as a cautious investor community portfolio compared to the historical average. In addition, problematic inflationary impulses and their negative effects look set to culminate soon. On the negative side, we are primarily seeing weak economic signals that cannot elicit traditional support from central banks, since they are fully occupied with countering high inflation. As mentioned above, there is also an elevated risk as we move from very low to higher interest rates. Overall, we thus consider it appropriate to maintain a neutral level of risk.

In our global equity portfolio, we are continuing to prioritise high-quality growth companies, since headwinds from rising interest rates should fade. We have added a partial currency hedge against the US dollar, which is actually much like increasing the proportion of Swedish equities at the expense of global ones. In Swedish equities, we are maintaining an overweight in large cap companies with lower valuations, which are mainly found among industrials and financials. We are complementing this with small and medium-sized companies that have more of a growth profile. In fixed income investments, we have recently extended our average duration and have approached our benchmark index, even though we foresee that the interest rate hiking phase will slow down. As usual, our alternative investments are independent, with little connection to the performance of both equities and bonds. This is the part of our portfolio that has shown the most stability during 2022. How we adjust our risk in the near future will probably depend on how quickly inflation and the economy slow down, and whether or not any structural weaknesses are exposed in the financial system. However, we believe that we have made it through the interest rate upturn phase and that it is too late to become predominantly defensive in our portfolios. We foresee continued tough times in 2023, but expected returns will meanwhile have risen, especially viewed in a slightly longer-term perspective.

Global equities:
Waiting for firmer footing

Central banks are continuing their efforts to fight inflation, which has reinforced this year's dominant trends. Growth companies continue to have a tough time in the stock markets, while companies with low valuations in traditional sectors have fared better. Classic negative signals in the form of a strong US dollar, rising interest rates and an inverted yield curve have made investors wary about taking on risk. On the other hand, companies are well-equipped in many cases, thanks to strong balance sheets and resilient earnings growth.

The quarterly report period has included some disappointments coming from some of the best-known US companies, such as Amazon and Alphabet (parent of Google), which can generally be attributed to weaker consumption and a weaker advertising market. The share price of Meta (parent of Facebook) has been hammered this year and is a chapter in itself, but the share price trend has not been improved by Mark Zuckerberg's investment in the capital-intensive development of the "metaverse". The two largest companies in terms of market capitalisation, Microsoft and Apple, delivered solid reports. Although Microsoft lowered growth expectations somewhat and Apple has some production problems in China, continued earnings growth is expected this year and next. The valuations of these companies have fallen to more reasonable levels, which decreases price risk. Tesla has joined the elite trillion dollar market cap club and is now the sixth largest company in the US (based on market capitalisation). The company has had impressive growth combined with high margins, surprising most analysts in recent years. However, its valuation remains high; another few years of good earnings growth are needed for Tesla to meet valuation expectations. Last year's favourite sector for fund managers – semiconductors – has had a tough time this year. Geopolitical headwinds and weaker demand for capital goods are among the reasons for its poor performance. But with valuations bottoming out and with strong underlying structural growth, the sector should have an opportunity to perform well going forward. The biggest company in the sector is Taiwan Semiconductor Manufacturing (TSM), which is valued at a price-earnings (P/E) ratio of just over 10.

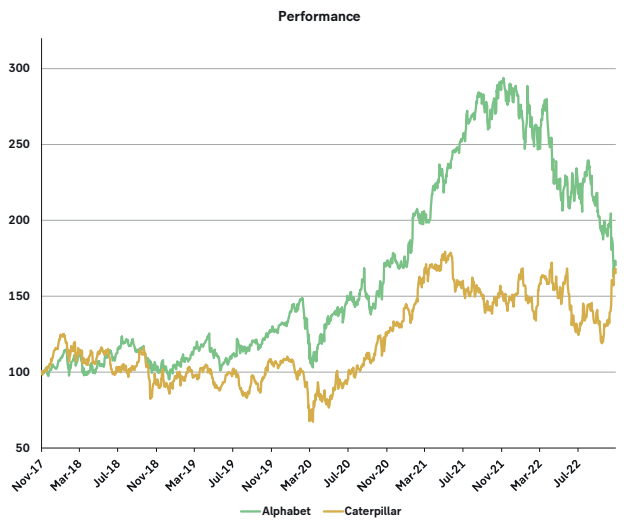
Expectations of global earnings growth in 2022 have been lowered this year and are starting to approach zero, which should be close to the truth since the fourth quarter is nearly over. Analysts expect earnings growth next year to be five per cent, although we should have a significant economic slowdown.

We believe that this figure will need to gradually be revised downwards, perhaps by about ten per cent, since inflation nonetheless contributes positively to nominal earnings growth.

The best-performing sector by far is oil, which has naturally benefited from rising oil prices. Oil companies are also lifting overall corporate earnings and stock market indices, which has been a source of irritation for fund managers who have chosen to exclude the sector on environment, social and governance (ESG) grounds and have underperformed for this reason. Unlike most sectors, banking benefits from central bank rate hikes since they widen net interest margins. This is also reflected in bank share prices. Even hard-hit euro area banks can look forward to a higher return on equity thanks to the ECB's rate hikes. At the other end of the scale, we have heavily indebted real estate companies, which are hurt by higher interest costs.

During 2022, the stock market performance of sectors and companies has been dominated by current events, and investors have not been particularly forward-looking. This means that rising interest rates have driven the market. Companies with big earnings in the near term (low valuations) have thus performed best, while companies that will generate earnings further down the road have been the worst performers this year. One explanation, apart from the higher discount rate, is that valuations soared too high last year, so there was a lot of air in the share prices of growth and quality companies. In most cases, these overblown share prices have deflated. We thus have a positive view of many companies with these characteristics, based on our forecasts of inflation and interest rates, which we expect to moderate in 2023 and normalise in 2024.

Same endpoint but different journeys

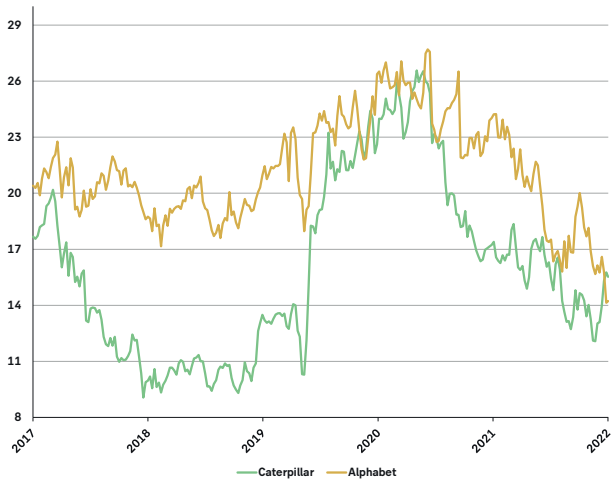


Source: Bloomberg

The chart shows the share price performance of two companies, which converged remarkably this year. Their returns are similar, but the journey has been been dramatic. Shares of Alphabet, which represents fast-growing tech giants, and Caterpillar, which represents traditional manufacturers, have had different trends on their journey to the same endpoint over the most recent five-year period.

This year, East Asian stock markets with a large proportion of technology shares – such as China, South Korea and Taiwan – have been hammered particularly hard. South Korea and Taiwan have been pulled down by the technology slump but shares in these markets are much cheaper than their Western European counterparts. China is considered "uninvestable" by an increasing number of global investors due to poor transparency stemming from government controls. Growing lack of interest in the Chinese stock market need not be a disadvantage from a returns perspective, as exemplified by the oil and gas sector, with investors dumping shares in that sector prior to 2022. It should not be forgotten that China depends on the private sector to generate jobs, with the goal of creating a broad middle class that is satisfied with life and accepts the country's political leadership. Nor does China have an inflation problem; it can provide both monetary and fiscal stimulus. If authorities end their zero-COVID policy, this will probably provide an immediate boost to stock markets.

Alphabet now has a lower P/E ratio than Caterpillar

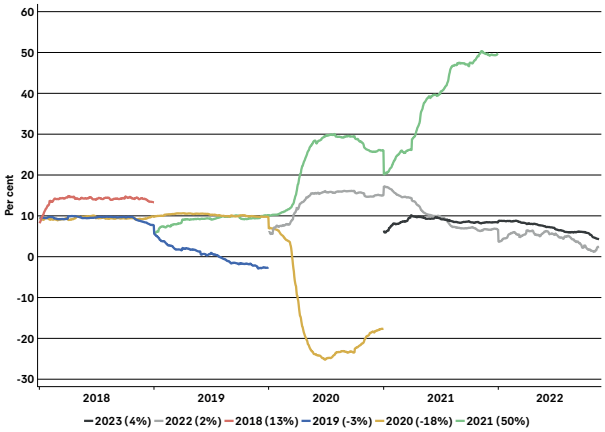


Source: Bloomberg

Things have come a long way when Alphabet has a lower share valuation than a cyclical company like Caterpillar, which is a sign that investors have adopted a sceptical approach to big growth companies. It is notable that Alphabet's earnings increased 190 per cent over the five-year period, while Caterpillar's increased 73 per cent. The P/E ratio measures the current share price (P) relative to one-year forward earnings (E).

Given the current interest rate trend and falling growth figures, investors should have a diversified portfolio that includes some equities with low valuations and some with slightly higher valuations that are justified by their high quality and good growth prospects. We prefer US equities, which represent growth and quality, and Asian equities, which are undervalued, to European equities. Although the latter also have low valuations, they face a greater risk of a lengthy recession and are poorly equipped for any energy crisis.

Small, gradual downward adjustments in earnings this year and next



Source: Bloomberg

The chart shows aggregate corporate earnings growth estimates for the coming 12 months. Analysts have lowered their estimates, but not as dramatically as share prices have fallen.

Nordic equities:
A more normal recovery

We expect positive stock market performance in the Nordic region during the coming year, sustained by an easing of concerns about US inflation and interest rates. A relatively good corporate earnings trend, combined with weak stock market performance during 2022, has pushed valuations down to relatively attractive levels. Leading indicators are now pointing to a slowdown in American inflation during the coming year, while the energy crisis in Europe has been less severe so far than could be feared only a few months ago. But political developments in China and Russia can be expected to curb risk appetite somewhat in our main scenario, and a sharp deterioration in the situation could kill it completely.

Solid earnings trend and attractive valuations

Overall earnings growth remains outstanding among Nordic listed companies (see chart). As was true ahead of the report periods for the first two quarters of 2022, there were widespread expectations that Q3 earnings forecasts would begin to falter, perhaps significantly. Fortunately, these fears and expectations proved incorrect once again.

How can earnings – and perhaps especially earnings forecasts, which are supposed to peer into the abysmal future the media say we face in 2023 – remain so positive?

There are several important reasons for this, and three of the most important are:

- Weak currencies help a lot
- Not all sectors are weak; the focus of news headlines is on the weak parts of the economy
- There are also many big winners due to higher interest rates and expensive energy

We have lowered our 2023 earnings forecasts somewhat in both the Nordic region and Sweden. Yet we still expect 9 per cent earnings growth in Sweden – down from 15 per cent this year – and only a 5 per cent decrease in the Nordic region after 36 per cent growth this year. Negative earnings growth in the Nordic region during 2023 is entirely explained by Denmark, where earnings are expected to fall by 43 per cent.

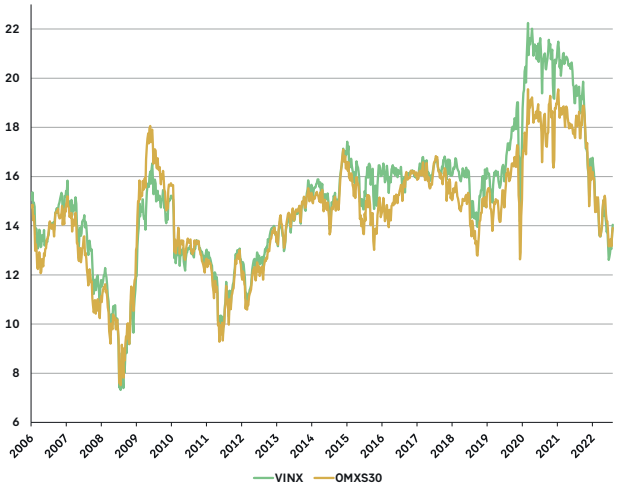
Meanwhile we expect Finland and Norway, as well as Sweden, to show continued growth in earnings. The entire projected earnings decline in Denmark is, in turn, explained by one company: the shipping and port terminal giant A.P. Møller-Mærsk, whose net earnings are expected to fall by USD 24 billion in 2023 compared to 2022. This is due to a normalisation of container freight rates after pandemic effects have subsided.

Continued stable earnings trend for Nordic and Swedish companies

Source: Bloomberg, SEB

The chart shows indexed earnings forecasts, based on moving 12-month earnings estimates, for the companies in the VINX Nordic index and the Stockholm All Share index, respectively. Weak European currencies have contributed significantly to the recent positive trend, but even taking this into account, earnings growth is encouragingly strong.

Attractive P/E ratios in the Nordics and Sweden



Source: Bloomberg

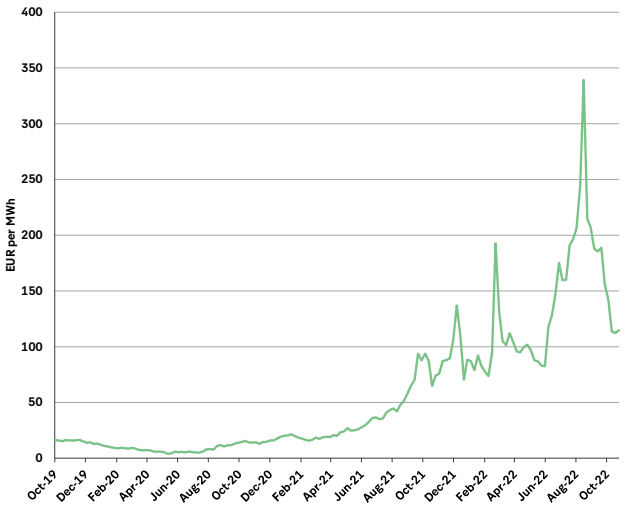
The chart shows 12-month forward P/E ratios for the VINX Nordic Index and OMXS30 index of the 30 most liquid stocks on the Stockholm stock exchange. Earnings are valued at multiples that are close to their lowest levels in the past 10 years.

Based on current consensus forecasts, both the Nordic market as a whole and major Swedish companies are valued at a price-earnings (P/E) ratio of just below 15, based on 12-month forward earnings estimates. This is equivalent to a discount of 7-10 per cent compared to the average over the past 10 years. Share prices of major Swedish companies are especially attractive compared to valuations of their equity capital.

The energy crisis will culminate, and the worst shock is over

The energy crisis in Europe is playing a central and crucial role in the region's economic downturn, while also contributing significantly to its inflation problems. Will the energy crisis culminate this winter or next? That remains to be seen, but the worst shock to the economy and sentiment should definitely be over. A problem like this is always easier to deal with if there is more time for preparations. Natural gas prices have fallen by more than two thirds from their peak in late August. Futures prices for next winter have also fallen sharply, but not as much. Instead, they are indicating prices very similar to the current ones again in the winter of 2023/2024. Some observers believe that the loss of natural gas flow from Russia, which during 2022 helped Europe build up gas reserves for the upcoming winter, will be a greater disadvantage for the next winter than the many benefits provide by longer advance planning. Whether the crisis culminates this winter or next, so far Europe has adapted impressively fast, although mild and windy weather has also contributed to the recent large decline in natural gas and electricity prices. The downturn is a welcome relief for European economies.

The price of natural gas in Europe has fallen sharply from its August peak



Source: Bloomberg

The chart shows the futures price of natural gas in the Netherlands with delivery the following month, in euros per megawatt hour. The price remains extremely high in a historical perspective but has fallen dramatically from its peak levels, despite a near-total halt in natural gas supplies from Russia. A warm autumn is helping, but Europe's adaptability has also been impressive so far.

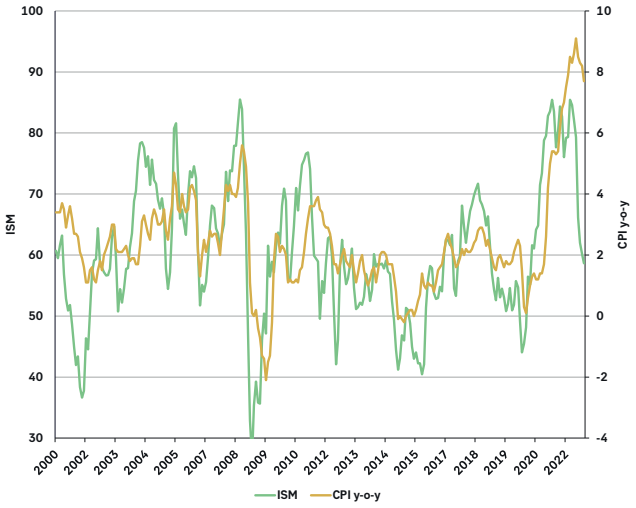
Imports of liquefied natural gas (LNG) have increased sharply, while investments in energy efficiency and savings are having a major visible impact. Although the really big changes will take longer, in 2023 businesses and households will be better prepared for next winter. The expansion of LNG-related infrastructure as well as energy efficiency improvements and other technologies such as biomethane and solar cells will have progressed even further a year from now. In addition, the formerly Gazprom-owned natural gas stockpiles in the EU are now controlled by economically rational operators (Gazprom drained these reserves ahead of the winter of 2021/2022).

US interest rates a focus of stock market attention

Despite all the other high-profile risk factors – the war in Ukraine; the energy crisis in Europe; the collapse of consumer confidence in all economically important regions; China's real estate crisis, draconian COVID restrictions and sabre-rattling – in practice US interest rates and inflation have steered the stock market in recent months. They can also be expected to be in the driver's seat in the future. We believe this is good news, because numerous anecdotes from companies as well as commodity prices and leading indicators provide hope of a relatively rapid easing of inflationary pressures in the US. A less hawkish central bank policy would potentially be very positive for the stock market. The mere hope of such a shift caused a stock market surge on November 10.

During 2022, long-term real US bond yields normalised – a painful process for the stock market, but one that is already past. A less hawkish central bank does NOT in itself imply a return to the extremely easy monetary policy that dominated the previous 10 years. The change we are now seeing is the fading of headwinds, not the pumping of a new bubble.

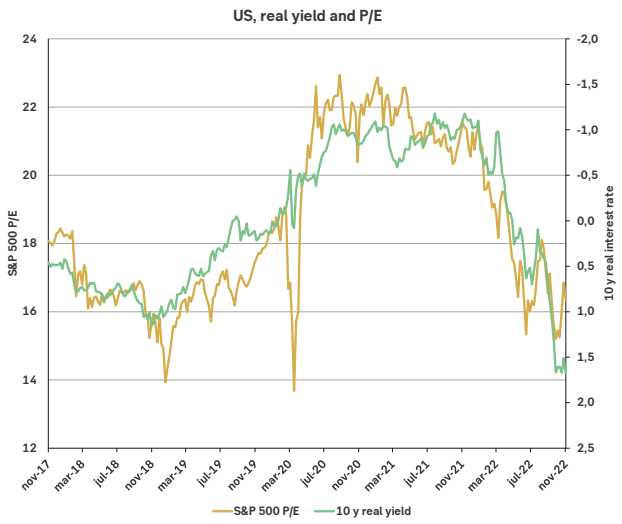
Purchasing managers' indices indicate slowing US inflation



Source: Bloomberg, SEB

The chart shows US consumer price index (CPI) inflation and the average of the price components in US purchasing managers' indices for the industrial and service sector (ISM Manufacturing and Non-manufacturing), maintained by the Institute for Supply Management. The price components of the ISM indices have historically been a good early indicator of inflation. Today they are falling rapidly, especially in manufacturing but also in services. The composite index of price components has declined sharply from its peaks earlier this year.

Low real yields swelled share valuations but have now normalised



Source: Bloomberg

The chart shows the real yield on a 10-year US Treasury note and the P/E ratio of US stocks belonging to the broad S&P 500 index. Valuations of US equities are, in turn, highly important in determining how the Nordic stock market is valued.

The recovery will not be like 2020-2021

As in April 2020, we have just experienced a significant stock market downturn. There is a lot of concern about future economic developments, just like then. There the similarities end. The abnormally sharp, quick and large stock market upturn that followed the collapse of equities in the spring of 2020 will not be repeated this time. The driving forces are completely different now.

Without bubble-pumping central banks, we see no reason to speculate on an early return to last year's investor behaviours and preferences. We are unlikely to see P/E ratios close to 100 times the annual earnings of small caps with single-digit growth and large premiums in the valuations of asset management companies. We believe that investors should not put their money on the stock market's 2021 winners and 2022 losers (often the same companies), although these are the shares that initially rebounded the most strongly after US inflation figures for October were published on November 10. Focusing on absolute valuations and how much prices or multiples have changed since their 2021 peak is not relevant.

The most important reason why a reinflation of last year's bubbles is unlikely is the absence of the driving forces that were behind that upturn, but psychological factors are also important in these contexts. For example, after the stock market bubble in 2000 had deflated, it took more than 20 years before Nordic IT consulting company shares returned to similar P/E ratios.

So far, telecom operators have never again been valued as high as during the millennium bubble. The companies that led the stock market upturn that culminated in 2007 were completely different from those that drove the 1998-2000 surge. Similarly, for many years real estate shares were treated with great caution by investors after the stock market collapse of 1990-1992. After being red-hot in the late 1980s, real estate shares were among the few sectors that were essentially unaffected by the stock market euphoria of 1999-2000.

Our favourite sectors during the current recovery are instead sharply depressed cyclical consumer goods companies, industrials and portions of the commodities sector. Consumer durables companies are facing a very difficult market right now, but this is also reflected in their market valuations. Industrials are showing good resilience and should be well placed to generate good earnings, despite the probable impending recession. Many of these companies will benefit from large investments in the energy sector and energy efficiency improvements. In many cases, the companies are extremely well-managed and profitable and have relatively good growth prospects over the coming economic cycle, since we foresee a great need for investments in physical infrastructure. Several Nordic companies in the commodities sector are structurally well-placed ahead of the energy transition and now enjoy competitive advantages that are much greater than historically.

China and Russia are continuing to lower investors' risk appetite

The risk of a significant escalation of Russia's military aggression against Ukraine or other countries, as well as political developments in China, are concerns that can be expected to continue pushing down the stock market during the foreseeable future. Of course, undesirable events in these countries could completely nullify our main scenario of positive stock market performance, but the likelihood of such a development should not be exaggerated. Russia is showing a surprisingly low appetite and capacity for conventional warfare. From a strictly stock market perspective, the worse effects of the war have probably already occurred. In China, the concentration of power, threats of military aggression against neighbours and the political leadership's remarkable neglect of economic developments are significant concerns for the stock market. However, hopes of a return to more normal economic policies in this important region live on. The potential for surprises compared to current levels is probably greater on the upside.

Fixed income investments: Central banks are nearing their last rate hikes

The absence of cooling effects on the global economy from earlier interest rate hikes and persistently high inflation forced central banks to continue taking firm action via further rate hikes during the third quarter of 2022. As a result, bond yields continued to rise across all maturities, increasing the likelihood of recession in most geographic regions. Yield spreads between corporate and government bonds fell from their peaks at the end of June and trended flat within a wide range during the period. This can be interpreted as meaning that investors believe any recession will be fairly mild.

When the US Federal Reserve raised its key interest rate by 0.75 percentage points in early November, it was the fourth consecutive hike of that magnitude since mid-June. This has been a much faster, more aggressive rate cycle than was predicted at the start of the year. The Fed's intention has been to bring down high inflation pressures as quickly as possible. Meanwhile, due to these rapid rate hikes, analysts believe that the time when the Fed ends its hiking cycle and embraces a looser monetary policy is fast approaching. At present, our view is that the Fed will carry out its final rate hike during the first quarter of 2023.

The European Central Bank (ECB) raised its key interest rate by 0.75 points in late October. We believe another 0.75 point increase can be expected at the ECB's next meeting in December, followed by a final hike of 0.50 points in February. That means the ECB's key interest rate will peak at 2.75 per cent.

As for Sweden's central bank, we foresee a situation similar to that of the ECB. In our view, the Riksbank will raise its key interest rate to 2.50 per cent by year-end, and then to 2.75 per cent in February. The path after that will depend on how quickly inflation slows. However, we believe the Riksbank will lower its key rate during the second half of 2024.

10-year government bond yields (forecasts)

	11 Nov	Dec 2022	Jun 2023	Dec 2023	Jun 2024	Dec 2024
US	3.82	4.20	4.10	3.70	3.50	3.30
Germany	2.06	2.40	2.50	2.35	2.20	2.00
Sweden	2.02	2.30	2.50	2.55	2.40	2.20

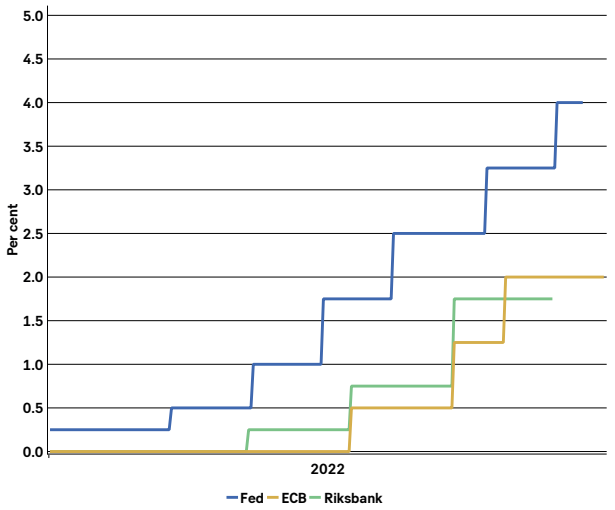
Source: SEB, forecasts November 2022

Ten-year US Treasury yields are expected to peak in late 2022, while yields on their Swedish counterparts are expected to turn lower during 2023.

The corporate bond market was rather stable during the period, despite weak signals of economic growth and stubbornly high inflation. Third-quarter corporate earnings reports showed resilience and an ability to manage higher cost pressures. Default expectations for the year ahead have clearly risen recently. However, these expectations have been revised from historically low levels, and the new level of about 4 per cent is in line with the historical average for corporate defaults. The fundamental situation for corporate bonds thus looks rather favourable despite challenges around the world, provided that macroeconomic developments are not significantly worse than we foresee today.

Uncertainty about future economic growth, interest rate hikes and the strength of the US dollar have continued to create headwinds for emerging market bonds in recent months. However, the outlook is starting to turn brighter, since the downturn has started to make valuations in individual markets look attractive, mainly in energy-exporting countries. Meanwhile most central banks are nearing the end of their tightening cycle.

Sharp key interest rate hikes this year



Source: Macrobond

Record-high inflation has forced many of the world's central banks to sharply raise their key interest rates this year. They include the US Federal Reserve, the European Central Bank and Sweden's Riksbank.

Theme: Energy storage

The power to lift solar and wind to the next level

An industrial revolution is under way, with a focus on energy. In the short term, this will be especially apparent in the Nordic countries, where various large manufacturing facilities are being built in such specialities as battery production and fossil-free steel. One factor that has held back the global climate transition so far is the shortage of energy storage capacity. Wind and solar power are competitive sources of power, but their Achilles' heel is uneven production that is determined by the weather. There are many energy storage solutions, with both advantages and disadvantages. We see enormous growth potential for several of them going forward.

The Nordics – an industrial revolution focusing on electrification and energy storage

At least seven new battery factories are currently being built in the Nordic region by companies such as Volvo, Northvolt, Freyr and Morrow. Many more are at in early planning stages. Investments are also being made by suppliers of materials and components for the rapidly growing battery industry. Meanwhile SSAB, H2 Green Steel and LKAB are investing huge sums in the production of fossil-free steel and sponge iron – projects that will require enormous quantities of electricity and green hydrogen. Alongside this, companies such as Sandvik, Epiroc, Volvo, Scania and Volvo Cars are working on electrification of the vehicles and machinery they deliver. The transformation of the passenger vehicle industry in recent years has scarcely gone unnoticed, and after a tentative start over a period of years, electrification is now making rapid advances, for example, in the mining industry. Mines that have switched to electric-powered equipment reportedly see only advantages compared to diesel-powered alternatives. Suppliers of electric-powered mining trucks have sold out all their production capacity for more than a year going forward.

Energy storage is critical to the industrial revolution now under way. Batteries replace the fuel tanks in vehicles, but they are also needed to create a balance in power systems that rely on a large proportion of sustainable but intermittent electricity production. To make fossil-free steel, "green" hydrogen (made using renewable energy sources) is needed. This will sharply increase demand for electricity, but green hydrogen can also play an important role in balancing the electricity market.

Wind and solar power have the same Achilles' heel

The biggest problem with wind and solar power is that the pace of production is determined by wind speed and sunlight, not by how much electricity customers want. This creates major imbalances between supply and demand. It means that these energy sources need to be supplemented with other more flexible sources that are often dirty and expensive and have low average capacity utilisation.

Power plants dedicated to handling peak electricity demand have an average capacity utilisation of 5 to 7 per cent and are powered by fossil fuels, according to the US Energy Storage Association. Even in countries like Sweden and Norway, with good access to cheap, flexible and clean hydropower, balancing wind power with hydropower is a problem. Short-term fluctuations have especially negative consequences.

While power grids that are supplied with a large proportion of renewable energy may have difficulty meeting demand during certain periods, at other times there is a surplus of electricity – with extremely low prices and power generation that is completely wasted. By supplementing renewable power sources with energy storage solutions – both of extremely short and much longer duration – supply can become more adaptable and flexible. Surplus production during favourable weather can also be utilised.

> *"Energy storage is crucial to the industrial revolution now under way."*

Numerous energy storage solutions

While this theme article deals mostly with the fast-growing market for gigantic batteries as energy storage solutions, the energy storage method that is by far the most widely used today is based on water.

Another alternative that almost certainly appears likely to enjoy some commercial success is production of hydrogen from water (through electrolysis) when there is surplus electricity and the price is low. This solution can help stabilise an energy system with a large proportion of intermittent sources. Green hydrogen can then be used, for example, to produce sponge iron that is processed into fossil-free steel, as a fuel for heavy vehicles, as an input for the chemical industry or as fuel for auxiliary power units.

There are also technological solutions based on flywheels (mainly to balance short-term fluctuations in production and demand), compressed air, thermal energy storage and molten salt. Among the more imaginative solutions are hoists that lift concrete blocks connected to a generator when electricity is cheap and then release them when electricity prices are high.

Hydropower in both directions

Good access to hydropower also gives countries like Sweden and Norway an advantage when it comes to their potential to expand wind and solar power. In practice, water reservoirs are giant energy storage units. They are very effective in balancing intermittent power, both for short periods and between seasons. On the other hand, they do not eliminate the need for other energy storage solutions, especially for short periods. But most countries are not blessed with these valuable natural resources to the same extent.

One way to increase a hydropower plant's ability to balance intermittent power sources is to supplement them with a pumped storage system. By pumping water back up to water reservoirs, the energy storage potential of a hydropower plant can be further increased. This is an old, widely-used technology found in many places around the world.

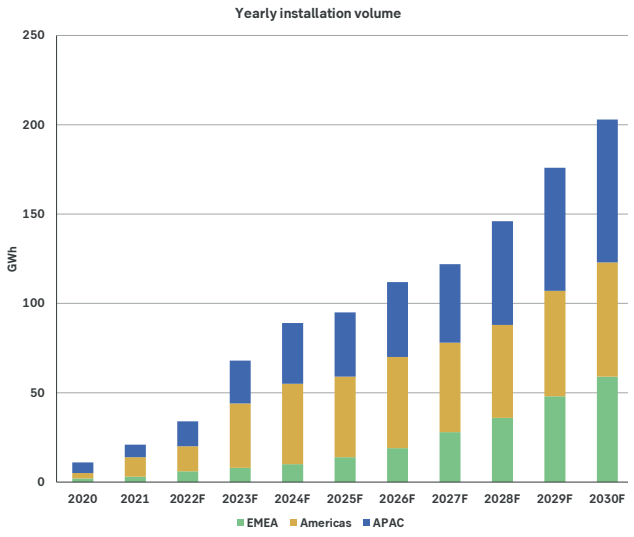
One variant of pumped-storage hydropower is a closed system using water reservoirs at two different elevations. Such systems can be located, for example, in shuttered mines – creating a pure energy storage unit that does not provide any new electricity production capacity but does not affect any waterways either.

Electric cars are only a sub-market

Many people probably associate energy storage mainly with batteries, and perhaps specifically with the rapidly growing market for electric car batteries. This is a large and expanding market. Global electric car sales this year are expected to be five times higher than the 2019 figure, but electric cars will be far from the only driving force for the battery market in the years ahead. According to Bloomberg New Energy Finance (BNEF), the sale of electric car batteries is expected to increase to four times the current figure by 2030.

Like the electric car market, the market for stationary energy storage in power grids, charging stations and other facilities has increased by about 400 per cent since 2019. This market is expected to grow even faster than the electric car market over the next few years. The forecast for 2030 is six times the record level of this year.

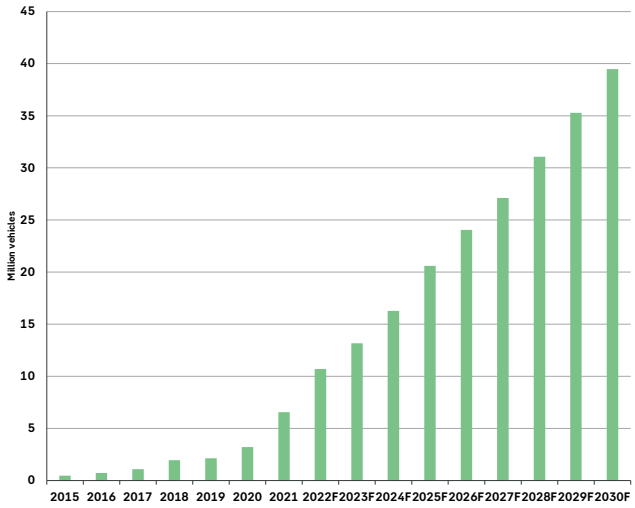
Strong growth expected for large batteries



Source: Bloomberg New Energy Finance

The chart shows the annual installation volume of large stationary energy storage batteries, for example those used by power producers, network operators and households. The statistics and forecasts are divided by geographic region, in this case Europe, the Middle East and Africa (EMEA); the Americas; and the Asia-Pacific region (APAC). A big increase is expected next year, mostly in the Americas thanks to US investment tax breaks for energy storage recently signed into law. A large proportion of capacity has historically been dedicated to frequency regulation (balancing supply and demand) and other services for network owners as well as auxiliary power in the event of outages. But in the future, batteries are expected to be used mainly for somewhat longer-term storage – between different times of the day.

Rapid growth in electric cars expected



Source: Bloomberg New Energy Finance

The chart shows annual global sales of electric cars and BNEF's forecast for the next eight years. From 2022 to 2030, the number is expected to nearly quadruple. The car battery market should grow faster, since the proportion of hybrid cars will decrease while the range of electric cars will increase.

Symbiosis between electric cars and renewable power

There is a natural symbiosis between the growth in electric cars and energy storage solutions used as a complement to renewable energy production. These two areas of energy storage applications intersect and reinforce each other in various ways:

- There is no climate-related reason to electrify the transport sector if this electricity does not come from sources with lower emissions than modern combustion engines (although electric vehicles may benefit the local environment in cities).
- There is a clear risk that peak loads in the power grid will be even more extreme if many vehicles must be charged quickly and simultaneously.
- Old car batteries can be connected to each other and can serve as stationary energy storage units.
- We foresee explosive growth, after a lag of several years, in the number of end-of-life (EOL) electric and hybrid car batteries.
- Electric cars that are connected to the power grid can also potentially lend or rent out storage capacity at certain times.

The energy source is also important in battery production

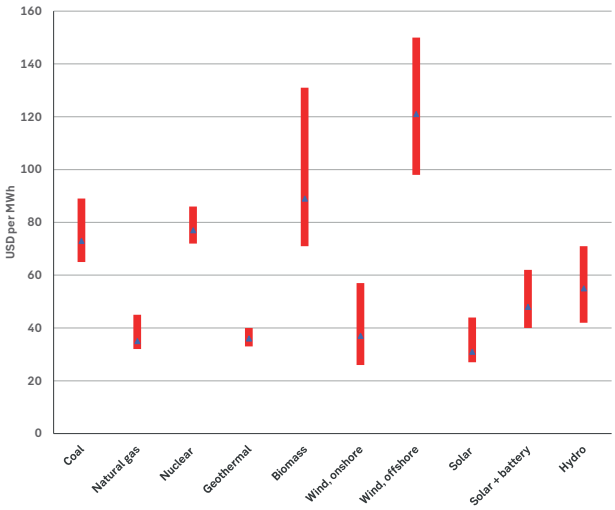
The biggest problem with electric cars from a carbon dioxide perspective is battery production. The emissions generated from making batteries are almost as great as those from manufacturing the entire car. There are also many reports in the media about poorly run facilities for production of critical minerals used in batteries. The new battery and battery component factories now being planned in the Nordic region will greatly improve sustainability in their industry.

For example, the Norwegian producer Freyr, which is building a factory in Mo i Rana, Norway, and planning another in Vaasa, Finland – each with its own battery cell production – will be completely fossil-free. This will reduce total emissions from battery production by 31 per cent compared to the global average today. By purchasing materials from local Nordic producers, emissions will be cut a further 19 per cent. Packaging and recycling solutions will add to this. In the long term, Freyr expects more Nordic suppliers to the battery production industry, which will have additional positive effects. All in all, Freyr calculates that its batteries will generate 81 per cent less emissions than the global average, which today is about 80 kg of CO_2 per kWh.

Car batteries can get a second life

Given the commercial success of electric and hybrid cars over the past decade, we are now seeing an enormous increase in the number of end-of-life (EOL) car batteries. What should we do with them? One interesting option is to give them a second life as part of a larger stationary storage solution. Even after a battery is too weak to power a car, it may be good enough to operate for ten years in various stationary applications; only after that is it optimal to recycle the battery materials. Old car batteries can also be connected to provide back-up solutions in the event of power outages and operate at electric car charging points and in server halls. Extending the service life of EOL car batteries can further improve the viability of electric cars in purely financial terms as well as from the standpoint of sustainability.

Wind and solar power are very competitive even without subsidies



Source: United States Energy Information Administration

The chart shows the cost (highest, lowest and average) per MWh of electricity over the 30-year expected life of different kinds of power plants, excluding subsidies, for a US power plant that can start production in 2027. Coal-fired power plants are assumed to include 30-90 per cent statutory carbon dioxide recycling. Including subsidies (tax breaks), the financial viability of a US power producer improves significantly, especially for renewable alternatives.

Energy storage has the power to lift solar and wind to the next level

The percentage of electricity production derived from renewable sources is growing sharply in the advanced economies of the 38 OECD countries. This is not only because they are environmentally friendly and thus receive government backing but also because they are highly competitive with all conventional sources of power (even without subsidies). Recently, supply security has become another strong argument, mainly in Europe, where the risks of dependence on fuel deliveries from dictatorships have become all too apparent.

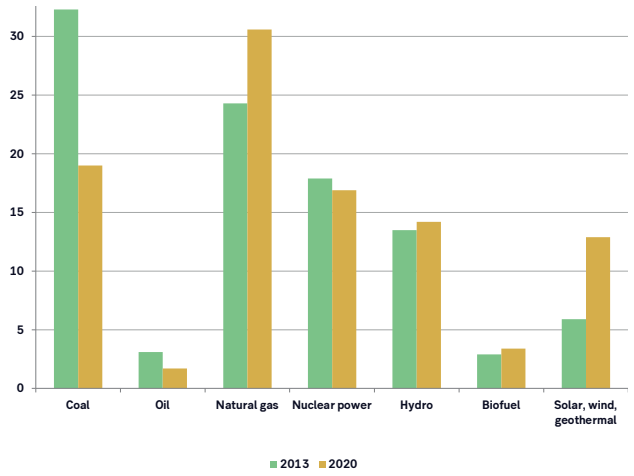
Since most exploitable hydropower resources have already been developed in the OECD countries, when new power capacity is to be built, in practice it is a matter of choosing between wind, solar or natural gas. In developing countries where emissions are not measured at all or very seldom, coal is the most important competitor. Even when a coal-fired power plant is legally required to recycle only 30 per cent of its carbon dioxide emissions, as in the US today, this increases the costs so much that according to the US Energy Information Administration, this dirty power source is far more expensive than natural gas, solar and wind power (excluding all subsidies). According to the EIA, nuclear power is relatively more expensive but may potentially see a renaissance (mainly in Europe) due to the current energy crisis.

Electricity production in the OECD countries from renewable sources increased by 8 percentage points over the seven-year period 2013-2020 to just under one third of the total, according to the International Energy Agency (IEA). This growth came primarily from solar and wind power, whose share more than doubled during the period. However, hydropower remains the biggest renewable source and still generates somewhat more energy than wind and solar power combined. Renewables are growing at the expense of fossil fuels, with a clear decrease in coal-fired power: more than 13 percentage points. But there is unfortunately a risk that the use of coal will increase again in Europe due to the Ukraine war.

Nonetheless, only about 40 per cent of the world's electricity production takes place in the OECD countries. The growth of renewables has unfortunately not been as strong in the rest of the world. The biggest difference between the OECD countries and the rest of the world is the use of coal. Coal-fired power production in the rest of the world is nearly four times higher than in the OECD, while production of solar and wind power – but also nuclear power – is only half as much as in the OECD. What slightly improves the renewable electricity statistics for non-OECD countries is that they have a larger share of hydropower.

One important reason why the global energy transition is not progressing faster is the lack of flexibility in using solar and wind power. This is a problem especially when they account for a high share of total electricity production in a system, which is where energy storage solutions come in.

Renewable energy is growing rapidly from a low level



Source: IEA

The chart shows the share of electricity production by energy source in the OECD countries in 2013 and 2020 (preliminary data). Electricity production from renewable sources increased by 8 percentage points to more than 30 per cent, while production using fossil fuels decreased by the same figure to about 51 per cent. There has also been a major shift from coal to gas, a trend that unfortunately has reversed due to Russia's restrictions on gas exports.

Summary and conclusion

We see very good potential for strong growth in energy storage and related solutions for many years to come. This trend is being driven by the need for cleaner power sources together with stable, reliable access to electricity and by the electrification of the transport sector, which is continuing at a rapid pace. Energy storage solutions will also enable the next big step in the growth of wind and solar power and thus be a key part of the impending global energy transition. The growth and changes in magnitude that we foresee obviously also offer significant investment opportunities.

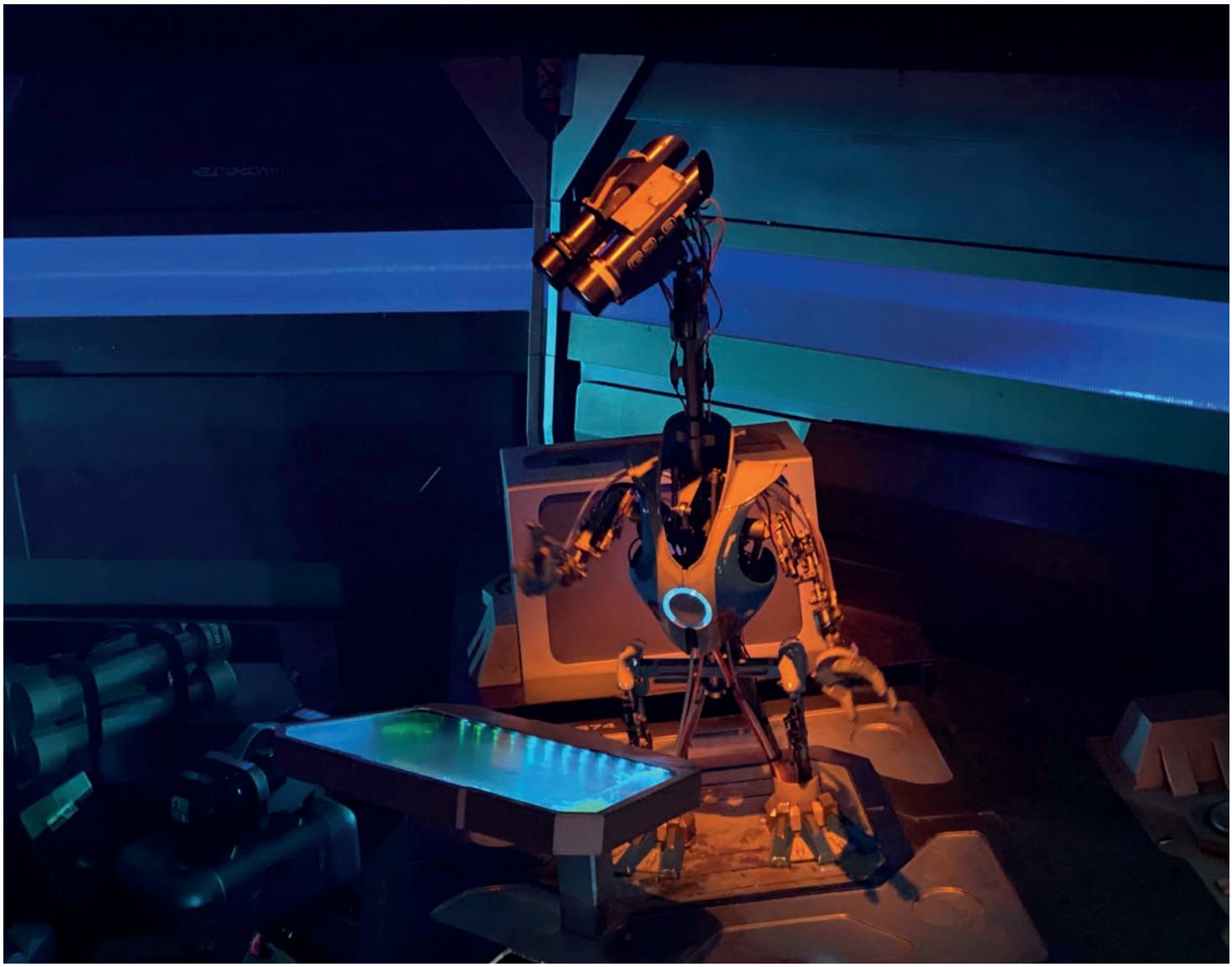
Energy storage solutions recently implemented with good results

Kauai, the Hawaiian pioneer
The Hawaiian island of Kauai, which is green in many ways, has long had great ambitions for renewable energy. A breakthrough was achieved in the island's effort to increase the total share of electricity generated from renewable sources with the construction of a combined solar panel and electricity storage facility from Tesla in 2017. That year, Tesla delivered a 13 MW solar power plant supplemented with a battery system with the same flow capacity – 13 MW – and a 52 MWh storage capacity. The investment was quickly successful and was followed by similar but larger-scale projects. Kauai revised its target upward – to meet 70 per cent of its electricity needs using renewable sources by 2030, a goal it achieved as early as 2021. These successes have also inspired others. The Hawaiian Electric Company quickly followed suit and has already build several similar facilities and is also planning even more – contributing to the energy transition on the much more heavily populated islands of Oahu, Maui and Hawaii, which have a total of 1.3 million inhabitants compared to about 67,000 on Kauai.

The world's largest pumped storage power plant, 2021
China is the country that invests the most in pumped storage hydropower. Total capacity for the projects being planned is nearly twice as much as in the US. The Fengning Pumped Storage Power Station in Hebei province is the world's largest such plant, with a capacity of 3.6 GW. The project was completed in 2021 and the total construction cost was USD 1.9 billion. As a comparison, the three nuclear reactors at Forsmark, Sweden, have a total generating capacity of 3.27 GW.

Neoen's Tesla battery, Hornsdale, Australia, 2017
This battery is best known for being built by Tesla in 54 days. Elon Musk (Tesla's CEO and founder) made a bet with Mike Cannon-Brookes (an Australian IT entrepreneur) on Twitter that Musk could solve the problem of South Australia's chronic power outage problem with a gigantic battery. Musk promised that Tesla would deliver the battery within 100 days, and he did so with 46 days to spare.

The battery is now owned by the French company Neoen, which specialises in solar and wind power as well as commercial energy storage. Initially, the battery could store 129 MWh and handle a 100 MW flow. Success – both financial and operational – was immediate, so capacity was expanded by a further 50 per cent in 2020. The battery facility helps to stabilise the power grid in the region and generate profits for Neoen by purchasing electricity when it is cheap and selling it when it is expensive. This legendary big battery has also become something of a tourist attraction, and nowadays visitors must book ahead if they want to see the facility in real life.



Theme: Automation
New technology and better solutions

Despite weaker global economic growth, there are areas where demand may remain strong. Electrification, sustainability, digitisation and automation are potential future growth areas that should have good resilience in these turbulent times. The general downturn in stock markets this year may be a good opportunity to invest in sectors and companies with favourable long-term prospects.

Automation will be an important tool for the future development of companies. By creating more and bigger opportunities in flexibility and efficiency, companies can reduce costs and thus boost profitability. One driver for increased automation is the development of new solutions that combine new advanced technology, more data and better software. Data from new modern higher-precision sensors will create totally new prerequisites for a more efficient flow of services and products throughout the value chain, from purchase to delivery. In this theme article, we consider various forces driving increased automation – including cost-effectiveness, employee safety, geopolitical uncertainty, inflation and interest rates. We will examine in greater detail some sectors and companies whose profitability outlook may be affected by changes. Despite global challenges and the risk of weaker global economic growth in 2023, new solutions can create conditions for more stable or increased profitability for successful companies.

Not just a cost argument

In the 1990s, many Swedish companies with labour-intensive operations moved their production structures from Western Europe and the United States to nearby low-cost countries in Eastern Europe and Mexico. It also became increasingly common for them to make more purchases from countries in Asia, especially China. With growing prosperity in these countries, combined with the increasing complexity of supply chains, their comparative advantages – for example in terms of wages and production costs – have weakened. Geopolitical uncertainty and reduced dependence on individual suppliers and their subcontractors are drivers in changing and improving production and delivery structures.

Aside from the ambition to continuously improve the cost-effectiveness of their operations, other factors affect companies' investments in automation:

- An attractive workplace
- Employee safety
- Quality
- Flexibility
- Environment

In recent years, many advanced economies have been characterised by a shortage of workers with the right skills. Most of these countries face a major demographic challenge – their population is ageing while the share of people of working age is falling. Rising payroll costs heighten the need for increased productivity, with one factor being the high priority companies always give to employee safety. Bottlenecks in the delivery of both input materials and finished goods are another argument for automation.

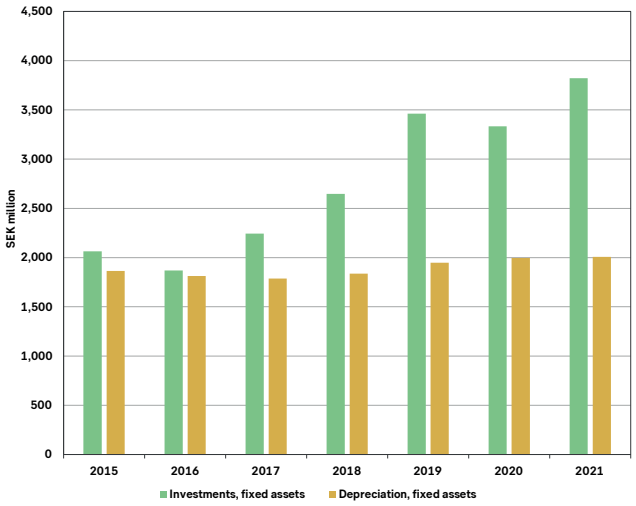
Companies have also largely announced targets for the reduction of greenhouse gas emissions in their own operations and in their supply chain. Many companies have committed themselves to global environmental and sustainable development goals, with the aim of sharply reducing greenhouse gas emissions. These developments, which are followed closely by financial advisors and investors, have created a need for increased investments to enable these companies to carry out their climate transition.

The unthinkable became reality – a war in Europe and a global pandemic. These events have forced companies, their executives and owners to take action in order to mitigate the effects of external events and increase their own flexibility. In the past two years, many companies have succeeded in offsetting increased costs by raising prices, thus to some extent preserving their profit margins. But increased outlays for logistics pose a great challenge for most companies, and most of them have not been able to offset this cost to the same extent as other expenditures. So it is natural for companies to focus to a greater extent on costs throughout the value chain – from purchasing, logistics and production of goods and services to marketing and sales. One way to reduce a company's outlays is to scale down payroll costs by increasing the share of technology and capital throughout the value chain and automating manual processes.

Automation can also lead to faster development of new products and services as well as improve flexibility and quality. Another important argument for automation is improvements in scalability, since increased volumes do not affect expenses to the same extent. A company's capital costs are also affected by external factors such as inflation and interest rates, which influence future investment decisions. Automation is expected to have a positive effect on a company's ability to predict future costs, since investments will be made closer to its current business structure and end-market.

Increased production efficiency creates conditions for building structures in the US and Western Europe that are just as cost-effective as operations set up in low-cost countries (if the cost of logistics and transport is included). One example is a company like Swedish bearing manufacturer SKF, which is investing in both automation and value creation by region. This has led to increased investments in fixed assets and, in particular, a higher relative level of depreciation in recent years.

The investment level at SKF has increased



Source: SEB, SKF annual report

The chart shows the level of fixed asset investments in SEK million annually for SKF and the amount of depreciation. SKF's increased investment level may be an indication of the growth potential for automation if the trend continues and if other companies choose to make similar investments.

Technological advances

The field of sensors plays a key role in increased automation. Today's new high-tech sensors – used in cameras, radar, LiDAR, lasers and other devices – completely transform the opportunities for automation. Along with the potential of vision technologies for computers and robots, other important input variables are touch and measurement of temperature, pressure and flows. The next step is to connect data rapidly, safely and reliably to and from sensors with software systems that react to deviations or with screens that allow the visualisation of flows. Some of this development involves translating physical objects into virtual models of reality. Virtual simulation possibilities give users the opportunity to test how systems react to problems and to optimise flows prior to placing a system in service. In order to optimise automation, systems must be self-learning and self-improving. That is one reason why machine learning and artificial intelligence are expected to be increasingly common features of future processes.

Investment ideas in automation may enable a company either to lower costs or boost revenue with market-leading solutions – or a combination of the two. Companies that successfully implement these strategies in their value chains create good conditions to be winners in the long term. Below are some examples of companies that may benefit from the growth potential of automation based on their exposure to megatrends.

Programmable networks

The Swedish networking and telecommunications company Ericsson has an explicit strategy of expansion in the business-to-business (B2B) market, providing new solutions and software as the quantity of data grows with the connection of more and more devices. The company's ambitions are reflected in two major acquisitions in the past three years outside of its Networks division, totalling SEK 70 billion.

Ericsson's latest acquisition, Vonage, provides two B2B communications solutions, which means companies do not have to invest and develop their own communications platforms. SMS, video, chat and voice can all be integrated in a company's own IT structure, or the company can choose a cloud solution for all of its communications needs. The next step for Vonage and Ericsson is to develop interfaces with programmable 5G networks so that different data sources can communicate with one another, which will make it easier for developers to create new 5G-based services. This new technology is important in making the automation solutions of the future a reality for factories, mines, ports and transport facilities.

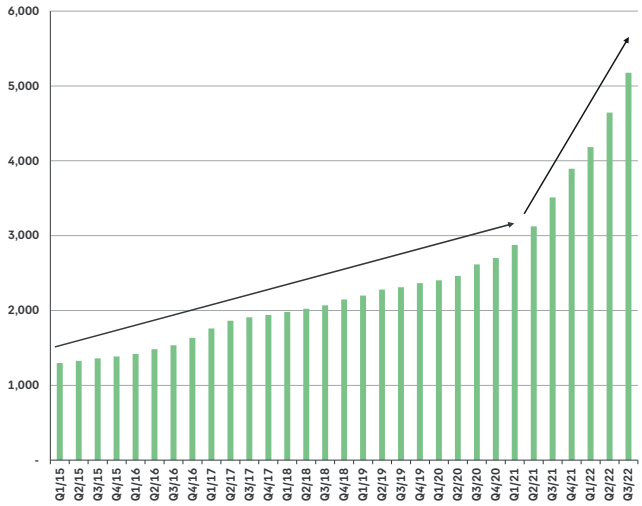
To date, Ericsson has endured major losses on its B2B investment. The stock market has reacted with great scepticism to the company's performance and prospects so far. In the past 12 months, the newly created Enterprise Wireless Solutions division showed a SEK 3.2 billion operating loss, excluding amortisation on the excess purchase price. In one quarter, Vonage contributed revenue of SEK 2.9 billion and an operating loss of SEK 0.8 billion but, excluding depreciation and impairment losses related to the acquisition, had a positive effect on performance.

Ericsson's price-earnings (P/E) ratio, based on projected future profits, is historically low. Clearly, this has been affected by questions about how the company has conducted its business in Africa and the Middle East and by the potential risk of major sanctions in the form of fines and other penalties. With big losses in Ericsson's future-oriented businesses, it is also uncertain whether the Enterprise Wireless Solutions division's growth rate and earnings contribution will offset any decrease in Ericsson's more profitable Networks division. This will depend on whether and when the development of 5G networks peaks over the next few years. During the last quarter, there were signs of a slowdown in 5G expansion in North America. Growth in new regions initially shows lower profitability.

The aim is for new solutions in the B2B market to create historically larger new business opportunities and larger growth potential for the Ericsson Group.

For Swedish telecom operator Telia, there is a clearly accelerating growth trend in subscriptions for connected devices, as shown below. Growth was stable during the latter phase of 4G expansion, and quarter-on-quarter growth in new subscriptions was 2-8 per cent from 2015 to early 2021. There are indications that 5G has accelerated Telia's growth rate in Sweden, which has been just over 10 per cent since the second half of 2021. Sweden has the highest growth, but all Telia regions are growing in the number of machine-to-machine subscriptions.

Dramatic increase in subscriptions for machine-to-machine communication at Telia



Source: SEB, Telia quarterly reports

The chart shows the number of Telia subscriptions in Sweden, Denmark, Norway, Lithuania, Estonia and Latvia for machine-to-machine communications. The reasons why companies are supplementing or replacing their existing communications infrastructure with mobile solutions include cost benefits, better coverage, better scalability, expansion potential, security and flexibility.

Boliden is ahead of its competitors

The Swedish mining company Boliden is a world leader in productivity, measured as ore mined per man-hour. Its mines have moved deeper underground in recent years, while total cash flow cost per metal extracted has also gone down compared to its competitors. The same is true of its smelting operations. One explanation is a higher degree of automation compared to competitors, which reduces the operational risk of falling prices, since mines with higher costs are taken out of service first. This can prevent prices from falling to the point where mining activity is threatened by a negative operating cash flow.

Boliden's mine in Kristineberg, Sweden, was the world's first underground mine to use a combination of wireless networks with IP telephony and positioning systems; similar systems have also been introduced at the company's Garpenberg and Kankberg mines. Using this new technology, operational planning improves since people working above ground can follow what is happening deeper inside the mines in real time. Better planning is lowering emissions and improving occupational safety. Working remotely with self-driving vehicles and more automation means fewer employees down in the mine, which can reduce the need for costly ventilation.

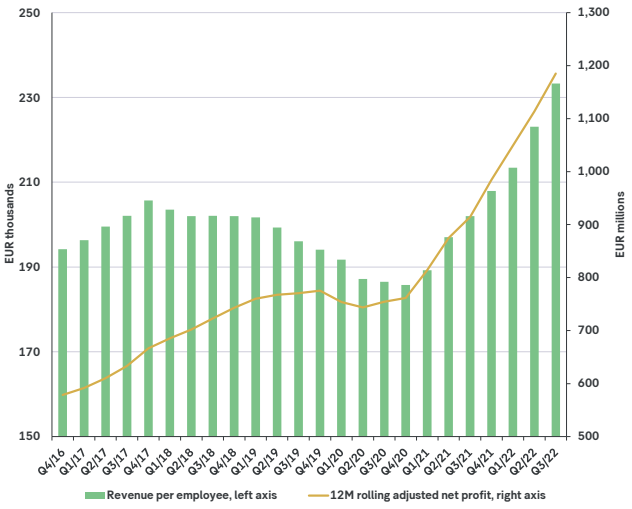
Three-dimensional positioning solutions

Hexagon is one of the bigger companies on the Stockholm stock exchange offering a leading platform in automation. It has expanded quickly over time, both organically and through acquisitions. The company's solutions include three-dimensional positioning systems featuring maps of physical places, simulation and virtual copies of physical objects, and bringing leading technologies together in a single ecosystem to develop optimal automation solutions.

Using a combination of advanced sensors for precise positioning and data processing software, advanced solutions can be created that reduce manual labour in such sectors as mining, vehicle technology, electronics, energy, aviation and defence. Hexagon's solutions range from the design of automation processes to day-to-day operation of facilities and continuous software upgrades. "Digital twins" is one area the company has great hopes for.

Given the lack of data from any customer who has started to use the company's automation solutions, we are using revenue per employee at Hexagon and rolling 12-month net earnings to monitor changes in the company's productivity and any correlation with net earnings. These are shown in the chart in the next column. During the pandemic, Hexagon's business model showed great resilience, with a limited decline in earnings bolstered by a high proportion of sales of software and services as well as a large proportion of recurring revenue.

Correlation between change in Hexagon's productivity and net earnings



Source: SEB, Hexagon quarterly reports

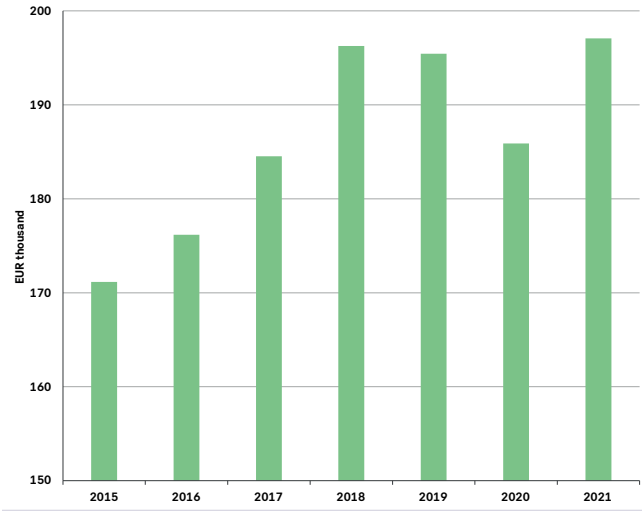
The chart shows revenue per employee (in green), with figures on the left-hand scale, and 12-month rolling net earnings in euros (in yellow), with figures on the right-hand scale. We see a correlation between the change in sales per employee and the net earnings trend.

From sensors to robots

The Swedish-Swiss engineering group Asea Brown Boveri (ABB) offers a wide range of solutions for automated processes, from hardware for visualisation to software and robots. The company has enjoyed a strong position and product range for many years, particularly in robotics. At ABB's capital markets day last spring, the company presented its future strategy in the process automation field. Annual revenue of this business area is about USD 5.5 billion and operating income is USD 610 million. Its end-markets include oil and gas extraction and processing; the mining, metal and forest product industries; and shipbuilding. Early this year, operations saw sustained double-digit growth in industrial software and digital services; annual growth since 2017 has averaged more than 15 per cent.

ABB's sensors for measuring temperature, pressure, flows and levels are expected to show market growth of 4-5 per cent over the next four years. Investments in analytics are expected to make this one of the fastest-growing segments, with drivers being production efficiency, emissions monitoring, regulatory requirements and greenhouse gas emission reduction. Automation solutions are also integrated with the company's electric and digital systems and with its customer offering in robotics.

Increased productivity except for the pandemic years



Source: SEB, SKF annual report

The above chart, which shows revenue per employee at SKF in thousands of euros, illustrates the company's productivity trend in terms of revenue per employee. Productivity grew by 3-6 per cent annually except in 2019 and 2020, when there was an economic slowdown (in 2020 due to the pandemic).

Fewer and more efficient factories

SKF's ambition is to grow its operations in machine condition monitoring and sell circular and automatic lubrication systems to its customers. However, this will be overshadowed in the short term by the company's cost-cutting programme. SKF's goal is to increase value creation in every region and reduce the number of factories through greater automation.

A consolidation in the number of factories and increased automation will lower SKF's cost of goods sold by more than SEK 5 billion by 2025. Some of this cost-cutting has already affected profitability, with each step in the value chain having a digital connection. For the three years until 2021, the gross margin trend was positive. Increased automation will make it possible to close five factories a year. To achieve this, the investment level has increased significantly since 2016. Investments in new fixed assets have exceeded depreciation by 60 per cent over the past five years, as shown in the chart on page 19.

These examples show that there is great market potential in automation, as an ever-growing number of companies raise their ambitions. Automation not only increases productivity and profitability, but also provides many other benefits – for example, reduced emissions, flexibility, safety both for employees and elsewhere in the value chain, and quality. The growth prospects for this sector can be positive even in a world where the economy slows down in 2023.

International overview: Challenging times ahead

Excerpt from the Nordic Outlook research report
For the full report, see seb.se/nordicoutlookreport.

So far, the global economy has shown unexpected resilience, but households are under mounting pressure from interest rates, inflation and energy shortages. We have thus lowered our growth outlook for 2023 and 2024. Some businesses have good potential to cope fairly well, which suggests a mild downturn from a historical perspective. But risks are on the downside, linked to the Ukraine war and the possibility that central banks may underestimate the sensitivity of their economies to interest rates.

In recent months, most economies have shown unexpectedly high resilience to rising interest rates and inflation. Households continue to spend money on types of consumption that were blocked during the COVID-19 pandemic, partly by using savings buffers. Businesses have benefited from the easing of global supply disruptions as well as continued relatively healthy demand in many areas. It is positive in many ways that economic activity is being sustained in the short term. This may help ensure that the period of abnormally high unemployment due to the crisis will be brief. It will also allow more time to prepare for the various challenges that the world economy is now facing. The risks of a deep downturn caused by a "perfect storm" – where multiple stresses occur at the same time – have thus been reduced. In the past couple of weeks, we have published updates of our forecasts for various countries. Overall, we have revised our GDP forecasts for 2022 upward. We expect GDP growth in advanced economies (the 38 OECD countries) to reach 2.7 per cent this year, compared to 2.4 per cent in our August forecast.

Only a temporary breathing space, unfortunately

However, it is difficult to foresee any lasting relief as long as fundamental problems related to inflation, energy supply and geopolitical turmoil persist. Overheated labour markets and continued high inflation have been among the reasons why the United States Federal Reserve (Fed) has disappointed markets recently on several occasions by signalling that the battle against inflation remains its top priority. Strong US production and jobs data will thus only lead to increased uncertainty about how much the Fed believes it needs to raise its key interest rate to ensure sufficient cooling of the economy. In Western Europe, energy prices – especially for natural gas – have recently fallen substantially. But prices are likely to rise again this winter and remain at high levels for quite some time. No end to the war in Ukraine is currently discernible, which means Russia can keep playing the energy card when it is most perceptible to the European Union.

Global GDP growth

Market	2021	2022	2023	2024
United States	5.9	1.8	0.1	1.5
Japan	1.7	1.9	1.8	1.3
Germany	2.6	1.6	-0.4	2.5
China	8.1	3.5	5.3	5.1
United Kingdom	7.4	3.0	-1.0	1.1
Euro area	5.3	3.2	-0.4	1.9
Nordic countries	4.4	2.5	-0.5	1.8
Sweden	5.1	2.9	-1.5	1.3
Baltic countries	5.9	1.6	0.4	3.3
OECD	5.6	2.7	0.5	1.9
Emerging markets	6.7	3.6	3.8	5.0
World, PPP*	**6.2**	**3.2**	**2.3**	**3.6**

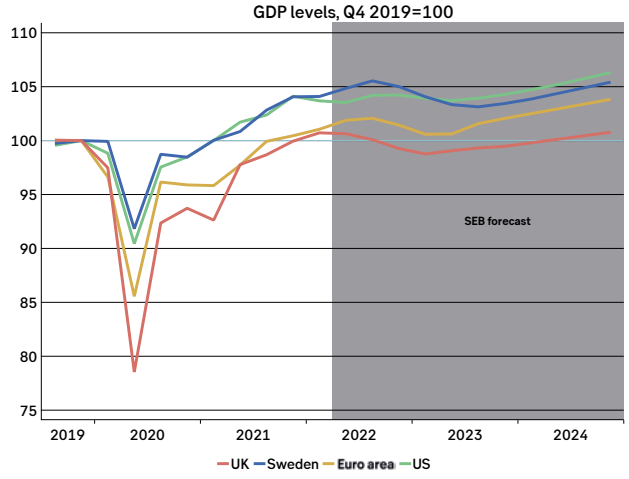
Source: SEB Nordic Outlook

*PPP=Purchasing power parities. The table shows forecasts of real economic growth in line with our main scenario.

Downward adjustments for 2023 and 2024

There are thus many indications that 2023 will be characterised by a widespread consumption-led economic downturn. In the US, GDP is expected to fall in both the first and second quarters of next year. Unlike the situation in 2022, we believe the labour market will weaken so much that it will be formally classified as a recession. Western Europe is also entering a recession, with negative GDP growth for the full year 2023 in both the euro area and the United Kingdom. Overall, we have lowered next year's GDP growth in the OECD countries from 0.9 to 0.5 per cent. Our downward revision for 2024 is of the same order of magnitude, and we now foresee a GDP increase of less than 2 per cent. Our forecasts for emerging market (EM) economies are relatively unchanged. However, their trajectory will be different from the OECD, since China's recovery will lead to slightly faster growth in our overall EM sphere next year. This will help smooth out global GDP growth, which will reach a low of 2.3 per cent in 2023, or slightly above the 2 per cent that is often used as a benchmark for global recession.

Mild recession ahead



Source: Macrobond , SEB

We anticipate weakly negative economic growth during the next few quarters, especially in Sweden, where the growth has been higher. During 2023, growth will turn positive.

There is a risk that the economy's interest rate sensitivity will be underestimated. But the pace of rate hikes is now historically very high. Before the global financial crisis, for example, the Fed raised its key rate by a total of 4.25 percentage points during a period of just over two years. Now all indications are that it will raise the federal funds rate by more than that in less than one year. In addition, the Fed has switched from being a net buyer of securities to slimming its balance sheet – moving from quantitative easing (QE) to quantitative tightening (QT). The long time lag before interest rate hikes have an impact on the economy poses a major dilemma, and we see risks that the Fed is underestimating the interest rate sensitivity of the US economy. Similar risks also exist in Europe, although key interest rates are not expected to reach such high levels as in the US. Weak economies with high government debt in southern Europe and highly leveraged households with a large proportion of floating-rate loans in Sweden and Norway create especially high vulnerability. But lower resource utilisation in Europe gives central banks there a greater degree of freedom. This is reinforced by the fact that European inflation is more supply side-driven, mainly via energy prices. It is thus not at all obvious that economic activity must be pushed lower in order to crush inflation. The trend of inflation expectations and wage formation thus assume a more independent role for growth forecasts in Europe than in the US.

Household-led recessions are unusual

Historically, recessions have often been triggered by imbalances in the corporate sector, for example via investment excesses or large inventory fluctuations. In recent decades, financial imbalances – which have led to major changes in credit conditions – have also played a major role. Today, on the other hand, households are the most heavily affected, largely due to inflation and interest rate shocks. Yet although consumer confidence is at record lows, consumption has so far been sustained with the help of household savings buffers and a strong desire to return to normal habits after the pandemic. These savings buffers are not yet exhausted, but it is not realistic to believe that households will be able to withstand continued high inflation and soaring interest rates. Rising unemployment and, to varying degrees, falling home prices are also contributing to ever-stronger headwinds.

Various reasons for the resilience of businesses

The depth of the GDP downturn will be determined by the degree to which a decline in consumption spreads to capital spending and to businesses. There are various reasons for the resilience we have seen so far. The prevailing global environment affects different economic sectors very differently. Rising geopolitical tension has accentuated the need for rearmament in many countries. This benefit parts of heavy industry. Meanwhile, the climate transition is generally creating a large investment need. In the short term, the easing of global supply chain problems also benefits various industries. Sectors that are traditionally cyclically sensitive and that are also often early in the business cycle now have full order books. The improving supply of input goods will enable businesses to weather the general economic downturn if it is not too deep.

Energy, interest rates dominate downside risks

Since Russia began its invasion of Ukraine, the downside risks in our forecast have largely been linked to even higher energy prices or other economic consequences of an escalation in the conflict. Given the continued tense situation, the war in Ukraine and Russia's relations with other countries will remain a focus of attention. For example, a complete shutdown of Russian gas supplies this winter – aimed at exerting further pressure on Western Europe – cannot be ruled out. This might trigger more extensive rationing and cause a far deeper recession than the one in our main scenario. But increasingly aggressive key rate hikes by central banks are now also starting to affect the risk picture. If it turns out that the Fed and other central banks are underestimating the economy's sensitivity to interest rates and the risks of financial stress symptoms, there will be a more dramatic downturn.

Higher energy prices further ahead

Natural gas prices in Europe have fallen by almost 80 per cent since their astronomical peaks in late August. Meanwhile prices of natural gas contracts for 2023-2024 have fallen by about 50 per cent. Yet futures prices are 4-6 times higher than normal. The same applies to electricity prices, since marginal natural gas prices serve as a benchmark for prices in much of the European energy market. As normal-level energy price hedges expire, the burden on European companies also increases.

Fairly neutral fiscal policies ahead

During the pandemic, many countries mobilised activist fiscal policies aimed at supporting households and businesses when their monetary policy manoeuvring room was small. Today this balancing act is much trickier, with fiscal stimulus measures threatening to worsen inflation problems and thereby trigger even more aggressive key interest rate hikes. In addition, because of already large public debt, higher interest rates and bond yields – as well as central banks that are no longer buying government bonds – there is less room for manoeuvre. This new environment is risky, as the Tory

government in the UK discovered in late September and early October when financial markets reacted harshly to its "mini-budget", which included unfunded tax cuts. The government's proposal triggered a sharp rise in market bond yields and weakened the British pound. These events undoubtedly served as a warning to leaders in other countries. On the other hand, overly passive fiscal policies may contribute to an unnecessarily deep recession and social unrest as household living costs rise dramatically.

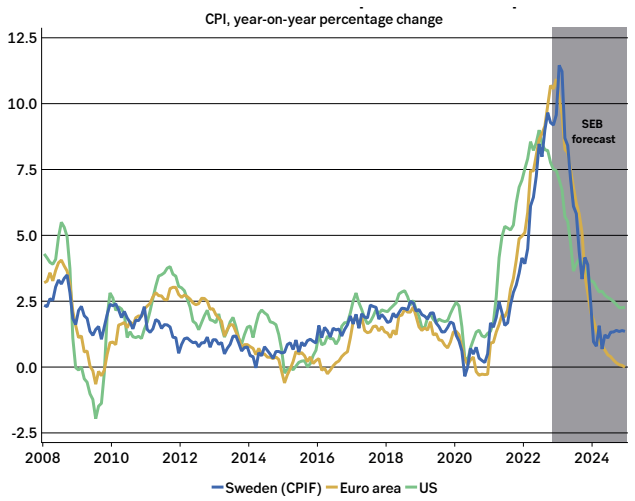
More mixed inflation signals

In recent months, we have seen some bright spots in short-term inflation signals. Maritime freight rates have fallen significantly, and bottleneck problems have generally eased. There are also early signs that agricultural commodity price increases are moderating, although this movement is still too small to affect our forecasts for consumer food prices. Differences between the US and Western Europe in terms of inflation environment have also become more apparent in recent months, particularly on the energy side. In the US, consumer price index (CPI) inflation peaked at 9 per cent in June, while we are seeing continued upward pressure on energy and food prices in Europe. We expect CPI inflation to reach more than 11 per cent in both the euro area and Sweden. At present, our forecast indicates that euro area inflation will peak this December, while in Sweden the February 2023 figure will be the highest. During the spring, inflation will fall sharply. By June, our forecast indicates a level around 4 per cent in the US and 7 per cent in the euro area and Sweden.

Above-target inflation throughout 2023

But although we expect inflation to fall sharply, it will remain well above the 2 per cent central bank target for quite some time. In recent decades, cost impulses have typically been held back, for example due to temporary reductions in profit margins and productivity improvements. This time, the inflation impulse is so strong that its dispersion will be more prolonged. Apart from energy, we do not believe that prices will fall again in very many areas. This means that we will see a rather lengthy adjustment process in which different actors, both businesses and households, will seek to compensate for higher prices in different ways.

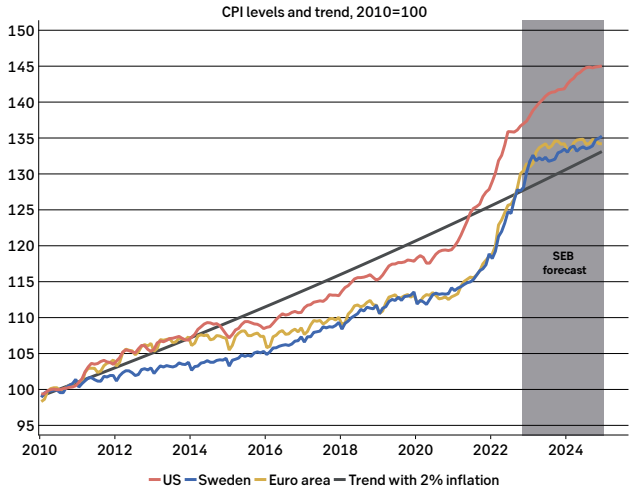
Inflation will peak at above 11 per cent in Europe



Source: Macrobond , SEB

Our forecast is that inflation will peak in both the euro area and Sweden during December 2022 and then fall clearly during the spring.

Price levels above trends after inflation shock



Source: Macrobond , SEB

We expect price levels to be high for a long time to come, aside from energy, which may result in a relatively prolonged adjustment process for both households and businesses.

Central banks nearing end of hiking cycle

Central banks have continued to raise their key interest rates rapidly, while signalling the need for further monetary tightening. We have thus revised our forecasts much higher: Fed and Bank of England key rates will peak at 125 basis points more than we predicted in the August issue of *Nordic Outlook*, reaching 4.75 per cent and 4 per cent respectively. We have raised our European Central Bank and Riksbank peak rate forecasts by 50 basis points to a maximum of 2.75 per cent (refers to the ECB deposit rate).

The US dollar will maintain its grip for a while

A global environment where high inflation is forcing monetary policy tightening despite weak growth will continue to favour the US dollar. With the Fed approaching its key interest rate peak, amid signs that US inflation is on its way down, the tailwind for the dollar will fade.

Changing drivers in 2023 will prevent further SEK decline. Partly due to falling risk appetite and European weaknesses, Riksbank rate hikes have not helped the krona. We have thus gradually lowered our SEK exchange rate forecasts. As we enter 2023, however, the flow picture will improve. The Riksbank will have completed its currency purchases, and we believe that Swedish institutions – as well as individuals – will be less inclined to invest in foreign assets. Decreased household borrowing due to sharply rising mortgage rates should also lead to a stronger krona.

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This report was published on November 22, 2022.
Its contents are based on analysis and information available until November 21, 2022.

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